**1. How do Array list, Set and Hashmap work internally?**

**Array List:**

Internally an Array List uses an Object[] Array which is an array of objects. All operation like deleting, adding and updating the elements happens in this Object[] array.

**Set:**

HashSet, it internally creates a HashMap and if we insert an element into this HashSet using add() method, it actually call put() method on internally created HashMap object with element you have specified as it's key and constant Object called “PRESENT” as it's value.

**HashMap:**

Internally HashMap uses a hashCode of the key Object and this hashCode is further used by the hash function to find the index of the bucket where the new entry can be added. HashMap uses multiple buckets and each bucket points to a Singly Linked List where the entries (nodes) are stored.

**2. How to maintain an order in set?**

 A set is used to provide a particular ordering on its element. The elements are ordered either by using a natural ordering or by using a Comparator. All the elements which are inserted into a sorted set must implement the Comparable interface.

Use LinkedHashSet if you want to maintain insertion order of elements

**3. What is difference between array list and linked list?**

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| |  |  | | --- | --- | | **ArrayList:** | **Linked list**: | | 1) Array List internally uses a dynamic array to store the elements. | 1.LinkedList internally uses a doubly linked list to store the elements. | | 2. Manipulation with Array List is slow because it internally uses an array. If any element is removed from the array, all the bits are shifted in memory | 2.Manipulation with LinkedList is faster than Array List because it uses a doubly linked list, so no bit shifting is required in memory. | | 3. An Array List class can act as a list only because it implements List only | 3.LinkedList class can act as a list and queue both because it implements List and Deque interfaces. | | 4. Array List is better for storing and accessing data | 4.LinkedList is better for manipulating data. | |

**4. What is fail fast and fail safe?**

Fail-fast and Fail-safe are the iterators or collections in Java

The Fail-Fast system terminates the operation as-fast-as-possible that are exposing failures and stop the entire operation.

Where as, Fail-Safe system doesn't terminate the operation that are exposing failures. The Fail-safe system tries to avoid raising Failures as much as possible

**5. What is hash code and equals? And why to use it for collections?**

**Hash code**:

A hashcode is an integer value associated with every object in Java, facilitating the hashing in hash tables.

The hashcode() method returns the same hash value when called on two objects, which are equal according to the equals() method. And if the objects are unequal, it usually returns different hash values.

**Equals:**

The java equals() is a method of lang.Object class, and it is used to compare two objects.

To compare two objects that whether they are the same, it compares the values of both the object's attributes.

By default, two objects will be the same only if stored in the same memory location.

**Use of hash code and equals**:

The equals() and hashcode() are the two important methods provided by the Object class for comparing objects. Since the Object class is the parent class for all Java objects, hence all objects inherit the default implementation of these two methods.